

PATENT ABSTRACTS OF JAPAN

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(54) FIBER PRODUCT

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain a fiber product capable of supplementing water-retaining function of a horny layer while keeping the fundamental properties of a fiber material, and having effects for keeping the skin normal by heightening metabolism.

SOLUTION: This fiber product is obtained by imparting arginine. The method for producing the fiber product, and a method for pretreating the fiber product are also provided.

[Claim(s)]

[Claim 1]Textiles which give arginine.

[Claim 2]The textiles according to claim 1 which give arginine with a binder.

[Claim 3]The textiles according to claim 1 or 2 which furthermore give pyrrolidone carboxylic acid.

[Claim 4]The textiles according to claim 1 or 2 whose amount of grants of arginine is about 0.05 to 10 weight % to fiber weight.

[Claim 5]The textiles according to claim 3 whose amount of grants of pyrrolidone carboxylic acid the amount of grants of arginine is about 0.05 to 10 weight % to fiber

weight, and is about 0.05 to 5 weight % to fiber weight.

[Claim 6]The textiles according to claim 2 in which a binder contains a cation system acrylic binder.

[Claim 7]The textiles according to claim 2 in which a binder contains a cation system acrylic binder and a silica dispersing agent.

[Claim 8]A method of processing textiles processing with processing fluid which pretreats textiles by a fiber pretreating agent containing a binder, and subsequently contains pyrrolidone carboxylic acid arginine and if needed.

[Claim 9]The processing method according to claim 9 a binder contained in a fiber pretreating agent contains a cation system acrylic binder.

[Claim 10]The processing method according to claim 9 a binder contained in a fiber pretreating agent contains a cation system acrylic binder and a silica dispersing agent.

[Claim 11]A pretreatment method of textiles which pretreat textiles with a cation system acrylic binder and a silica dispersing agent.

[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to the textiles used in order to maintain charming bare skin, and its processing method. It is related with the textiles which have an effect which maintains the normal skin by compensating the moisture retaining function of a horny layer, and raising metabolism especially.

[0002]

[Description of the Prior Art][Description of the Prior Art]. Originally amino acid, such as pyrrolidone carboxylic acid (PCA) or RUGININ, is human being's bodies.

It is a ***** natural moisturizing factor and has skin care nature.

Although using a protein fiber or giving protein to textiles was known (JP,H8-60547,A, JP,H5-36534,B), textiles were processed using amino acid, such as arginine, and there were no textiles to which the skin care characteristic was made to give.

[0003]This invention by compensating the moisture retaining function of a horny layer, and raising metabolism, after maintaining the key properties of fibrin material, it aims at giving a new function to the high textiles of adhesion with the skins constituted considering the synthetic fiber which is inferior to the hygroscopicity of nylon, polyester, etc. especially for the purpose of providing the textiles which have an effect which maintains the normal skin as a raw material, such as an underwear, a stocking, socks, and a glove.

[0004]

[Means for solving problem]This invention relates to the following clauses 1 - clauses 11.

Clause 1. Textiles which give arginine.

Clause 2. The textiles according to claim 1 which give arginine with a binder.

Clause 3. The textiles according to claim 1 or 2 which give pyrrolidone carboxylic acid further.

Clause 4. The textiles according to claim 1 or 2 whose amount of grants of arginine is about 0.05 to 10 weight % to fiber weight.

Clause 5. The textiles according to claim 3 whose amount of grants of pyrrolidone carboxylic acid the amount of grants of arginine is about 0.05 to 10 weight % to fiber weight, and is about 0.05 to 5 weight % to fiber weight.

Clause 6. The textiles according to claim 2 in which a binder contains a cation system acrylic binder.

Clause 7. The textiles according to claim 2 in which a binder contains a cation system acrylic binder and a silica dispersing agent.

Clause 8. Method of processing the textiles processing with the processing fluid which pretreats textiles by the fiber pretreating agent containing a binder, and subsequently contains pyrrolidone carboxylic acid arginine and if needed.

Clause 9. The processing method according to claim 9 the binder contained in a fiber pretreating agent contains a cation system acrylic binder.

Clause 10. The processing method according to claim 9 the binder contained in a fiber pretreating agent contains a cation system acrylic binder and a silica dispersing agent.

Clause 11. Pretreatment method of the textiles which pretreat textiles with a cation system acrylic binder and a silica dispersing agent.

[0005]

[Mode for carrying out the invention]As a raw material of fiber, synthetic fibers, such as natural fibers, such as cotton, hemp, silk, and wool, nylon, rayon, polyester, cuprammonium rayon, acetate, and an acrylic, are raised.

[0006]As textiles, fibril, thread, a pile, floc, textiles, knitting, a nonwoven fabric, a hair transplantation cloth, etc. are raised, and garments, such as an underwear, a supporter, socks, a stocking, tights, and a glove, are still more specifically raised.

[0007]As for the textiles of this invention, it is preferred to pretreat textiles by a fiber pretreating agent and to improve the washing durability of arginine. The textiles which give arginine with a binder are preferred, and the textiles which give arginine with a binder and a silica dispersing agent are more preferred.

[0008] As a fiber pretreating agent, binders, such as acrylic, a urethane system, a polyester system, and an epoxy system, a silica dispersing agent, etc. are raised. This binder has a preferred cation system binder (just electrified thing).

[0009]As a disposal method of pretreatment of textiles and arginine, and pyrrolidone carboxylic acid, means, such as immersion, coating, and spraying, can be used and it processes by immersion preferably.

[0010]After the textiles of this invention pretreat textiles with a cation system acrylic binder and a silica dispersing agent, it is preferred arginine and especially to process with pyrrolidone carboxylic acid if needed further. This pretreatment can be performed by immersing textiles in a 40-80 ** cation system acrylic binder and the solution containing a silica dispersing agent for 5 to 30 minutes, and carrying out centrifugal hydroextraction, for example to them. The concentration of the cation system acrylic binder of pretreatment liquid is about 0.5 to 5 weight %, and the concentration of a silica dispersing agent is about 0.5 to 5 weight %.

[0011]As a cation system acrylic binder, light epoch BX-71 (trade name: KYOEISHA CHEMICAL CO. LTD.) etc. is raised, for example.

[0012]As a silica dispersing agent, CLA-110 (trade name: KYOEISHA CHEMICAL CO. LTD.) etc. is raised, for example. the case where it pretreats by a fiber pretreating agent -- the grant thing of pretreating agent origin -- 0.05- in fiber -- it is about 0.3 to 5 weight % preferably about 10weight %. When pretreatment is performed by the fiber pretreating agent containing a cation system acrylic binder, the quantity of the cation system acrylic binder in fiber after pretreatment is about 0.3 to 2 weight % preferably about 0.05 to 5weight %. When pretreatment is performed by the fiber pretreating agent containing a cation system acrylic binder and a silica dispersing agent, The quantity of a silica dispersing agent of the quantity of the cation system acrylic binder in fiber after pretreatment is about 0.02 to 0.5 weight % preferably about 0.01 to 5weight % about 0.3 to 2weight % about 0.05 to 5weight %.

[0013]By performing such pretreatment, the washing durability at the time of making drugs adhere behind can be raised.

[0014]Grant of arginine can be preferably performed by immersing the pretreated textiles in the 40-60 ** processing fluid containing the arginine of 5-20 (g/l) for 5 to 30 minutes, and carrying out centrifugal hydroextraction to it. In giving pyrrolidone carboxylic acid with arginine, it processes similarly using the processing fluid containing the arginine 5-20 (g/l) and the pyrrolidone carboxylic acid 5-20 (g/l). As for the pH of processing fluid, adjusting to 6.0 to about 7.0 is preferred in order to prevent omission of a color. The softening agent (for example, WS-937: MARUE oil recovery incorporated company) may be further included in the processing agent containing arginine two to 5weight %.

[0015]As arginine, the arginine of isolation may be used and a salt with bases, such as

organic acid salt, such as inorganic acid, such as chloride, sulfuric acid, nitric acid, and phosphoric acid, citrate, succinate, a p-toluenesulfonic-acid salt, and methanesulfon acid chloride, sodium, and potassium, may be used.

[0016]As pyrrolidone carboxylic acid, the pyrrolidone carboxylic acid of isolation may be used and a salt with bases, such as sodium and potassium, may be used.

[0017]The amount of grants of arginine is about 2 to 10 weight % preferably about 0.05 to 10weight % to fiber weight.

[0018]In giving pyrrolidone carboxylic acid with arginine, The amount of grants of arginine is about 2 to 10 weight % preferably about 0.05 to 10weight % to fiber weight, and the amount of grants of pyrrolidone carboxylic acid is about 0.5 to 5 weight % preferably about 0.05 to 5weight % to fiber weight.

[0019]The retention of the arginine after ten wash of the textiles of this invention is not less than 90% more preferably not less than 75% not less than 60%. The retention of the arginine after 20 wash is not less than 80% more preferably not less than 65% not less than 50%.

[0020]

[Effect of the Invention]The textiles of this invention are excellent in the skin care characteristics, such as improvement in skin moisture regain.

[0021]The textiles of this invention pretreated by the fiber pretreating agent have washing durability, and the skin care characteristic maintains them for a long period of time.

[0022]

[Working example]Hereafter, this invention is explained more to details using an working example.

37.792 g of tights cloth made of working-example 1(1) skin-care processing nylon A cation system acrylic binder (trade name: 2%owf; light epoch BX-71 (KYOEISHA CHEMICAL CO. LTD.)), It was immersed in the 40 ** processing fluid (380 ml) containing a silica dispersing agent (trade name: 2%owf; CLA-110 (KYOEISHA CHEMICAL CO. LTD.)) and a softening agent (2%owf; trade-name WS-937; MARUE oil recovery incorporated company), and the cloth of 50 to 60% of moisture regain was acquired by the centrifugal hydroextraction for 15 seconds after that. The acquired cloth is immersed in the 40 ** processing fluid (pH 6.0) containing arginine (Arg; 10 g/L) and pyrrolidone-carboxylic-acid sodium (PCA-Na;15 g/L) for 30 minutes, and by the centrifugal hydroextraction for 15 seconds after that. The tights cloth of 50 to 60% of moisture regain by which skin care processing was carried out was acquired, this was dried, and it was considered as the tights cloth for the following examinations.

It is immersed in the 40 °C processing fluid (pH 6.0) which contains arginine (10 g/L) and pyrrolidone-carboxylic-acid sodium (15 g/L) on the same conditions as the working example 1 for 30 minutes, without pretreating 37.692 g of tights cloth made of working-example 2 nylon.

Then, by the centrifugal hydroextraction for 15 seconds, the tights cloth of 50 to 60% of moisture regain by which skin care processing was carried out was acquired, this was dried, and it was considered as the tights cloth for the following examinations.

The example 1 of an examination: Wash examination JIS 0217 Based on the 103 methods, 5.0 g of cloth acquired in working examples 1 and 2, It was considered as the detergent, and using attack (trade name: made by KAO CORPORATION):0.67 g/l (the amount of the standard used), with the bath ratio 1:30, volume of 150 ml, and 40 °C lukewarm water, it washed for 5 minutes and, subsequently rinsed. The laundering fluid total amount was 1460 ml. Wash was repeated 20 times and it asked for retention by measuring the amount of omission of arginine and pyrrolidone carboxylic acid with liquid chromatography.

[0023] The coating weight in Table 2 was measured by the following methods.

<Measuring method of coating weight> coating weight from the arginine and the amount of pyrrolidone-carboxylic-acid sodium which exist in the processing fluid before tights cloth being immersed. It asked by deducting the arginine and the amount of pyrrolidone-carboxylic-acid sodium which exist in the processing fluid dried by the processing fluid and centrifugal hydroextraction which remained after immersion. Arginine and the amount of pyrrolidone-carboxylic-acid sodium were calculated by measuring with liquid chromatography.

[0024]A result is shown in Table 1.

[0025]

[Table 1]

	実施例 1	実施例 2
前処理	有	無
加工前重量(g)	37.792	37.692
付着量(g) (付着率%)		
A r g	1.316(3.48)	0.442(1.17)
PCA-Na	0.363(0.96)	0.092(0.24)
洗濯 10 回後の保持率(%)		
A r g (g)	90.729	67.421
PCA-Na (g)	72.452	0
洗濯 20 回後の保持率(%)		
A r g (g)	84.1	—
PCA-Na (g)	60.3	—

[0026] The example 2 of an examination : After repeating the cleaning process which washes a lower arm part (3 cm x 3 cm), and is dried for 5 minutes with 2 ml of 10% of sodium-laurate solutions about three skin water measurement examination test subjects 3 times and making model dry skin, The cloth and the raw cloth which were obtained in working examples 1 and 2 were stuck, and the skin moisture regain of 30 minutes and 1 hour after was measured using SKICON-200 (trade name: product made from IBS, Inc.). Measurement environment was 20 ** and 40%RH.

[0027]As a result, when the cloth of this invention was stuck, compared with the case where it does not stick, the skin moisture recovery factor improved clearly. A result is shown in drawing 2.

[0028]The skin moisture recovery factor was measured by the following methods.

The skin moisture regain X after making model dry skin was measured at the beginning of <the measuring method of a skin moisture recovery factor>. Next the cloth and the raw cloth which were obtained in working example 1 were stuck, the skin moisture regain Y of 30 minutes after was measured, and the skin moisture recovery factor was measured by the following formulas.

[0029]

[Mathematical formula 1]

$$\text{皮膚水分回復率 (\%)} = ((Y - X) / X) \times 100$$

[0030] by turns, ten Example of Examination 3:long-term wear test test subjects will wear the tights and the unsettled tights using the cloth acquired in working example 1 for two weeks day one day respectively for 8 hours or more per -- softness, the touch,

moistness, warmth retaining property, and the state of skin -- it wore and examined about eight items of a feeling, liking, and winter wear fitness. The skin moisture regain of the heel after two-week wear was measured using SKICON-200 (trade name: product made from IBS, Inc.). Measurement environment was 20 °C and 40%RH. A result is shown in Table 2 and drawing 1. Each tights repeated washing for one day on the after-wear next day, and wearing to following week. The measured value (microsecond) of skin moisture regain is ten test subjects' average value.

[0031]

[Table 2]

タイツ 皮膚水分率の測定値(μ s)

実施例 1 39.17

未加工品 32.56

[0032] The example 4 of an examination : about three persons who are dry skin among ten test subjects of the example 3 of a long-term wear test examination by dry skin. The tights (right leg: processing zone) and the unsettled tights (left leg: raw division) using the cloth acquired in working example 1 were respectively worn for 1 seven days of 8 hours [per day] or more, and the skin moisture regain of the crus part of seven days after and the heel part was measured by SKICON-200. A result is shown in Table 3. The skin moisture regain (microsecond) of Table 3 is three test subjects' average value.

[0033]

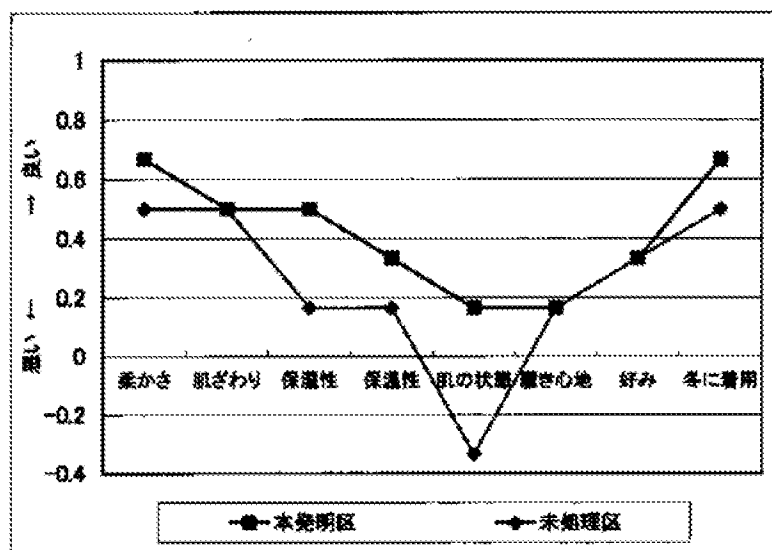
[Table 3]

<u>皮膚水分率 (μ s)</u>	
右下腿	2.33
右かかと	69.00
左下腿	0.11
<u>左かかと</u>	<u>34.44</u>

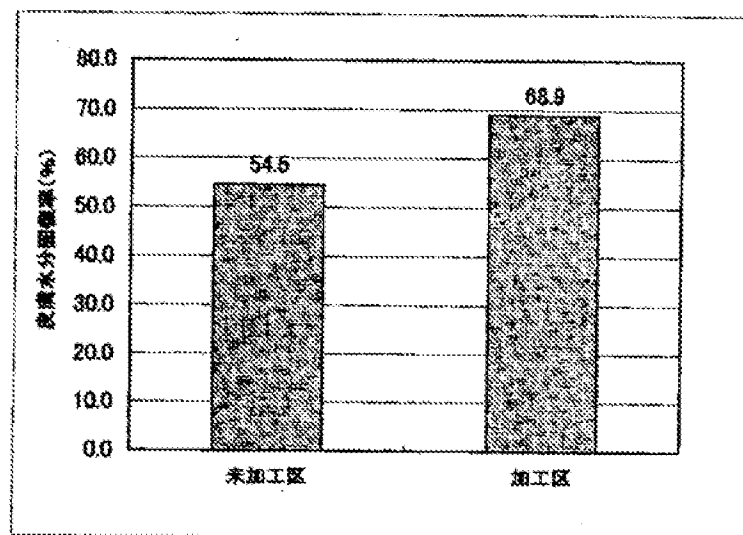
[0034] It is peevish and the photograph before wear of a part replica and after wear is respectively shown in drawing 3 and drawing 4.

[0035]The photograph before wear of a heel part replica and after wear is respectively shown in drawing 5 and drawing 6.

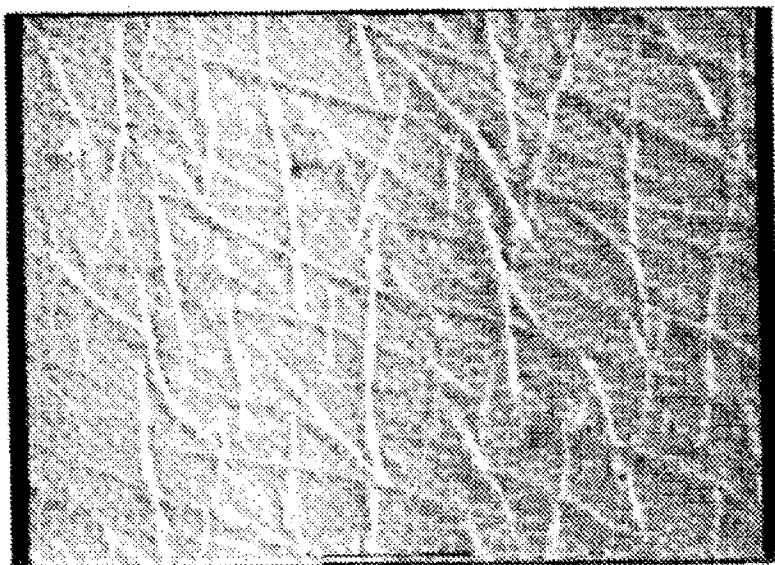
[Fig. 1]



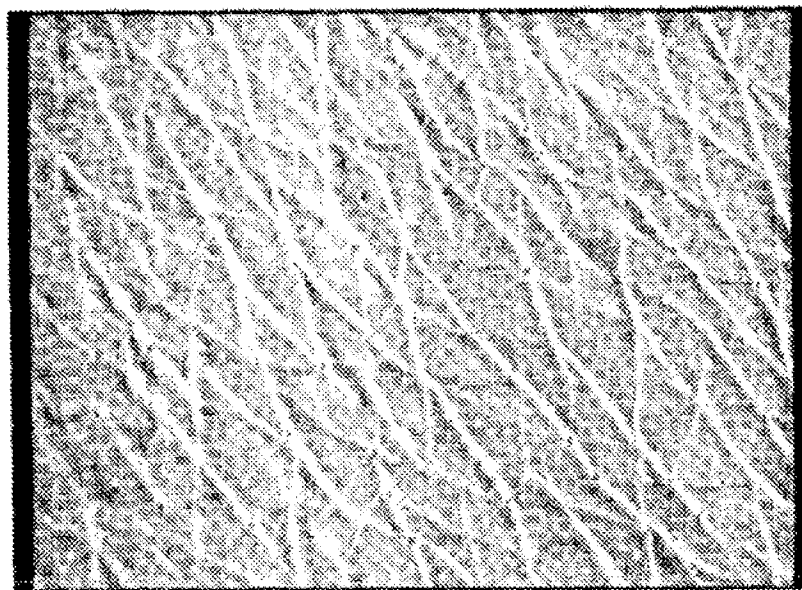
[Fig. 2]



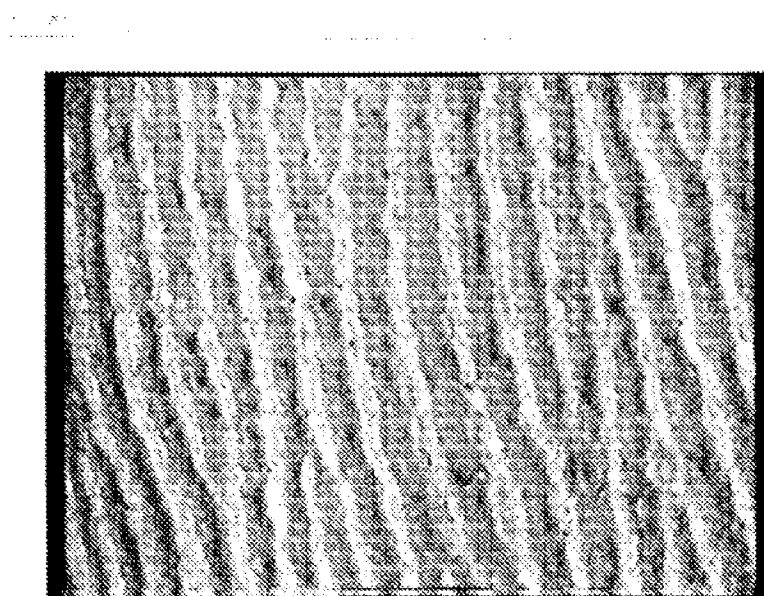
[Fig.3]



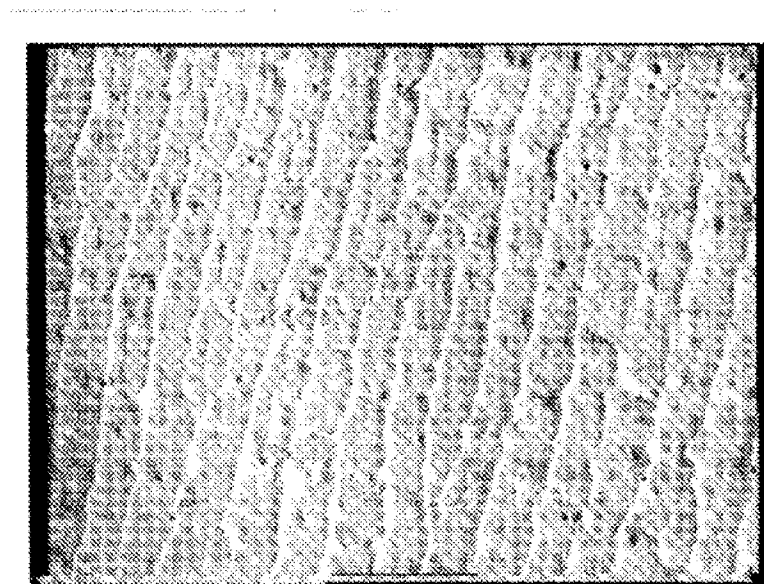
[Fig. 4]



[Fig. 5]



[Fig. 6]



<Partial translation of Hirose>

[Claim 1] A fiber product applied with arginine.

[Claim 2] The fiber product according to claim 1, wherein arginine is applied together with a binder.

[Claim 3] The fiber product according to claim 1 or 2, wherein pyrrolidone carboxylic acid is further applied.

[Claim 4] The fiber product according to claim 1 or 2, wherein the applied amount of arginine is 0.05-10 % by weight or so to the fiber weight.

[Claim 5] The fiber product according to claim 3, wherein the applied amount of arginine is 0.05-10 % by weight or so to the fiber weight, and the applied amount of pyrrolidone carboxylic acid is 0.05-5 % by weight or so to the fiber weight.

[Claim 6] The fiber product according to claim 2, wherein the binder contains acrylic binder of cation type.

[Claim 7] The fiber product according to claim 2, wherein the binder contains acrylic binder of cation type and silica dispersing agent.

[Claim 8] A method for processing a fiber product, characterized in that the fiber product is pretreated with a fiber-pretreating agent containing a binder, and then treated with a treating liquid containing arginine and optionally pyrrolidone carboxylic acid.

[Claim 9] The method according to claim 8, wherein the binder contained in the fiber-pretreating agent contains acrylic binder of cation type.

[Claim 10] The method according to claim 9, wherein the binder contained in the fiber-pretreating agent contains acrylic binder of cation type and silica dispersing agent.

[Claim 11] A method for pretreating a fiber product, characterized in that the fiber product is pretreated with acrylic binder of cation type and silica dispersing agent.

[0007] As to the fiber product according to the present invention, it is preferable to pretreat the fiber product with a fiber-pretreating agent for improving washing durability of arginine. A fiber product wherein arginine is applied together with a binder is preferable, and a fiber product wherein arginine is applied together with a binder and silica dispersing agent is more preferable.

[0013] By performing such a pretreatment, it is possible to improve washing durability when drug is attached later.